**Unit 3 - Gases - Key Points**

1. Gas mixtures are homogeneous because of the constant random motion of the particles
2. Gas are compressible because of the large spaces between the particles
3. Gas pressure is caused by collisions of particles with the walls of the container. More collisions = More pressure
4. P and V are inversely related... doubling the volume of the container will cut the pressure of the gas in half.
5. T and V are directly related... If you heat a balloon, it will expand.
6. T and P are directly related... If you heat a rigid container, the pressure of the gas will increase
7. Don't memorize all the gas laws, PV=nRT. Use this and remove constants and copy each side of eqn. Note n=mass/molar mass
8. One mole of the an ideal gas = 22.4 Liters ONLY at STP!!
9. Gas pressure and # of moles are directly related... if you double the ole of gas in a container, the pressure will double.
10. Molar Mass = dRT/P The "d" stands for density in units of g/L Use this gas constant → R 0.08206 (Molar mass Kitty= every good cat puts 'dirt' over its "pee")
11. The more molar mass a gas has, the slower it moves at a given temperature.
12. Temperature = Average Kinetic Energy (Gases at the same temp have the same avg K.E.)
13. When collecting a gas by water displacement: Ptotal = Pdry gas + Pwater vapor
14. Real gases behave most like an ideal gas at HIGH TEMPATURE and at LOW PRESSURE. The more polar a gas is or the larger a gas is the more it will deviate from ideal behavior.
15. Graham’s Law of Effusion and Diffusion: Effusion - How quickly a gas leaves one container and, via a tiny pin hole, reaches equilibrium in the empty portion

Rate of Eff Gas 1/Rate of Eff Gas 2 = √(MM Gas 2)/√(MM Gas 1)

Diffusion = Rate of mixing of gases (how far do they travel) - hint - heavier gases

don’t travel as far!